Improvement of nevus comedonicus after repeated microneedling

Maleka Najmi, BS,[a] Leigha Sharp, MD,[b] Ramya Kollipara, MD,[c] and Michelle Tarbox, MD[b]
El Paso and Lubbock, Texas and San Diego, California

Key words: microneedling; nevus comedonicus; nevus comedonicus treatment.

INTRODUCTION

Nevus comedonicus is a rare, benign hamartoma characterized by closely arranged, honeycomb-like dilated follicular openings with black or brown keratinous plugs typically affecting the face, neck, upper arms, chest, or abdomen.[1,2] It can occur congenitally or develop later in life, most commonly diagnosed at the age of approximately 10 years. Standard treatment options include topical corticosteroids, salicylic acid, ammonium lactate, topical and oral retinoids, and laser treatments. However, complete resolution is usually not achieved by these treatments, and relapses are common. Surgical excision has shown good aesthetic results in localized nevus comedonicus and is noted as the best option for cure.[2] We used microneedling as a minimally invasive treatment option for our patient. Although there is one prior case of microneedling using a fractional radiofrequency device reported to treat nevus comedonicus, to our knowledge microneedling without radiofrequency has never been reported or studied as a treatment option for nevus comedonicus.[3] A single treatment using a radiofrequency device can cost up to $1000, and this device is less readily available to most providers. We report a case of nevus comedonicus that responded favorably after receiving treatment with the novel method of microneedling combined with salicylic acid peel.

CASE REPORT

A 19-year-old African-American female presented with bumps on her abdomen since she was 12 years old. Physical examination found groups of closely placed hyperpigmented papules, each with a central hyperkeratotic plug on the lower abdomen (Fig 1, *A*). A clinical diagnosis of nevus comedonicus was made. Prior treatments included hydroquinone 4% cream, laser hair removal, and 4 sessions of salicylic acid peel, 20% of which failed to show improvement. Microneedling was performed with 3 to 4 passes with a depth of 2 mm using topical hyaluronic acid followed by salicylic acid peel 20%. Salicylic acid was chosen because of the patient's skin color. Hyaluronic acid was used to maintain adequate skin moisture, provide patient comfort, and enhance treatment outcomes. We performed this procedure approximately every 2 months based on patient and provider availability. Throughout the duration of her treatment, the patient adhered to a regimen of hydroquinone cream 4% in the morning and tretinoin 0.1% cream in the evening. Marked improvement was noticed after the first treatment, and, after 8 treatments, the comedones had resolved, at which point we decided to terminate the treatment (Fig 1, *B*).

DISCUSSION

Microneedles are minimally invasive devices that disrupt the stratum corneum creating temporary channels to the dermal microcirculation that generally range from 25 to 2000 μm in depth.[4] These micro wounds promote healing by inducing collagen synthesis and deposition resulting in improved skin appearance. This regeneration is triggered through activation of noninflammatory cytokines and growth factors like transforming growth factor β-3 and vascular endothelial growth factor. Topical products

From Texas Tech University Health Sciences Center, Paul L. Foster School of Medicine, El Paso[a]; Texas Tech University Health Sciences Center, Department of Dermatology, Lubbock[b]; and Cosmetic Laser Dermatology, San Diego.[c]
Funding sources: None.
Conflicts of interest: None disclosed.
Correspondence to: Maleka Najmi, BS, 5001 El Paso Drive, El Paso, TX 79905. E-mail: maleka.najmi@ttuhsc.edu.

JAAD Case Reports 2020;6:152-3.
2352-5126

https://doi.org/10.1016/j.jdcr.2019.12.012

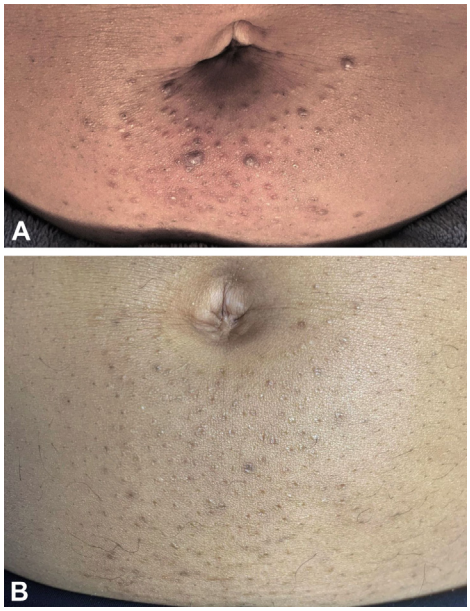

Fig 1. Clinical pictures before and after treatment with microneedling. **A**, Nevus comedonicus comprising multiple grouped open comedones on the lower abdomen of patient. **B**, Resolution of comedones after 8 microneedling treatments.

are often added in conjunction with microneedling to enhance its penetration and effects.[5] Hyaluronic acid, when used as an adjuvant, has been shown to improve patient outcomes after minimally invasive dermatologic procedures by restoring moisture, texture, and overall appearance of the skin.[6]

We explored the use of microneedling in conjunction with hyaluronic acid and salicylic acid after standard therapy failed. Unlike skin ablative methods, including dermabrasion and injections, which can trigger an inflammatory reaction in the epidermis leading to scarring, microneedling negates negative side effects if limited to appropriately sized needles of 1 to 3 mm.[7] We used needle depth of 2 mm, which was well tolerated by our patient. To date, the only prior case of microneedling as a treatment alternative for nevus comedonicus used a microneedling fractional radiofrequency device,[3] which is more expensive and less readily available than microneedling alone. In our case, microneedling showed promising results with improvement noted at each subsequent patient visit, and complete resolution was obtained after 8 treatments. We recommend microneedling as an effective option for the treatment of nevus comedonicus.

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